

ABSTRACT OF THE DISCLOSURE

Herein disclosed is a data processing system having a memory packaged therein for realizing a large-scale and high-speed parallel distributed processing and, especially, a data processing system for the neural network processing. The neural network processing system according to the present invention comprises: a memory circuit for storing neuron output values, connection weights, the desired values of outputs, and data necessary for learning; an input/output circuit for writing or reading data in or out of said memory circuit; a processing circuit for performing a processing for determining the neuron outputs such as the product, sum and nonlinear conversion of the data stored in said memory circuit, a comparison of the output value and its desired value, and a processing necessary for learning; and a control circuit for controlling the operations of said memory circuit, said input/output circuit and said processing circuit. The processing circuit is constructed to include at least one of an adder, a multiplier, a nonlinear transfer function circuit and a comparator so that at least a portion of the processing necessary for determining the neuron output values such as the product or sum may be accomplished in parallel. Moreover, these circuits are shared among a plurality of neurons and are operated in a time sharing manner to determine the plural neuron output values. Still moreover, the aforementioned comparator compares the neuron output value determined and the desired value of the output in parallel.